Program Achievements

DoD's commitment to implementing initiatives to enhance and improve the Environmental Restoration Program is another way DoD builds trust with stakeholders by doing the right thing. This section highlights several DoD initiatives that help ensure that the job is getting done efficiently and thoroughly by—

- Increasing program effectiveness through process improvements such as partnering with regulatory agencies, reviewing remedies for effectiveness and cost-avoidance, and reviewing site management practices
- Cross communication of ideas and leveraging environmental cleanup technologies
- Involving community stakeholders in the cleanup process.

These initiatives are essential to the cleanup program's success and to ensuring that trust in the cleanup program remains strong.

Program Efficiencies

DoD constantly strives to increase its effectiveness in choosing the most appropriate remedy for each site and in performing cleanups to achieve regulatory closure. Use of

Cleanup Program in Action:
Fort Wainwright, Alaska

A unique teaming relationship between the Army and regulators at Fort Wainwright, Alaska, resulted in quick preventive measures to halt contamination of the Chena River. Historic operations at Fort Wainwright contributed to extensive soil and groundwater contamination, including solvent and petroleum / oil / lubricant (POL) plumes. Many abandoned fuel and sewer lines run through the site. In the 1950s, the Army installed a metal retaining structure, which prevented solvent and petroleum contamination from reaching the river. Seepage into the river was minimal until recent years when low water levels increased the amount of contamination flowing to the river. Initially, upon discovery of the increased contamination, booms were placed in the river to control the seepage. In 1998, the Army, EPA, and Alaska's Department of Environmental Conservation (ADEC) determined that the seepage needed better control, and further efforts to install a more permanent remedy began. The Army removed the metal retaining structure and installed a replacement containment structure at minimal cost. In the course of the project, the Army removed 650 cubic yards of soil. In addition, remedial efforts resulted in the recovery of over 1,700 gallons of product. The installation ultimately sold the recovered product, and the proceeds of the sale were returned to the installation. This project took place over a 6-week period and paved the way to a more permanent air sparging curtain system, which the Army will install to protect the river. By electing not to use a traditional pump-and-treat system, the Army saved more than $1.5 million. The strong partnership between Fort Wainwright, ADEC, and EPA, characterized by joint decision making and document drafting, ultimately resulted in more timely, inexpensive, and effective cleanup and pollution prevention.

voluntary agreements, peer review of remedies, leveraging of the Internet's communication capabilities, and optimization of final cleanup operation and monitoring are a few of the measures that DoD is exploring for improving the quality, speed, and cost-effectiveness of its implementation of the Environmental Restoration Program.

State Voluntary Cleanup Agreements

In FY98, DoD entered a groundbreaking voluntary cleanup agreement with the Commonwealth of Pennsylvania. The Components and the Pennsylvania Department of Environmental Protection (DEP) signed the agreement on July 17, 1998. The first of its kind, this agreement is intended to allow all parties to concentrate on achieving timely, cost-effective cleanup and signifies a commitment by all parties to focus on these goals. The voluntary cleanup agreement ensures structure, provides a measured pace, and ensures mutual accountability.

DEP Secretary James M. Seif joined representatives of the U.S. Departments of the Army, Air Force, and Navy and the Defense Logistics Agency in signing the first cooperative multisite agreement in the nation covering military installations. The agreement was signed in a ceremony at Willow Grove Naval Air Station on July 17, 1998.

The agreement offers incentives for all parties by requiring joint planning, use of innovative technology, public participation, and the sharing of resources to enhance the state–federal relationship. In addition, the agreement reflects DoD's commitment to cleaning up sites to regulatory levels and to having cleanups quickly approved by the state in order to avoid the high costs associated with long-term cleanup negotiations. The Commonwealth receives assurance that the military will conduct cleanup activities on a specified schedule — which ensures that the money is in place. Once the Commonwealth determines that DoD has achieved the requirements of the agreement for a given site, the military is released from further environmental liability.

This landmark agreement illustrates DoD's belief that building relationships with states to achieve site cleanup benefits all parties. The benefit to the citizens of Pennsylvania is the earlier return of cleaned up sites to economically valuable reuse; the benefit to DoD is faster and less costly completion of cleanup — and reaching program completion sooner. DoD plans to use this agreement with Pennsylvania as a model for voluntary agreements with other states.

Peer Review

Peer review, in which a panel of experts evaluates site cleanup alternatives, is an important part of choosing a final cleanup remedy. DoD uses peer review to apply institutional and industry knowledge to ascertain which cleanup remedies and site investigation activities are both protective and cost-effective. The Air Force was the first Component to establish a peer review process, and all Components now use it in some form. The Army refers to its process as Independent Technical Review; the Navy calls its review panels Tiger Teams.

Cost avoidance is one benefit of the peer review process. Analysis of the most recent remediation techniques for a particular situation can help avoid unnecessary costs. The Army's BRAC Independent Technical Review resulted in avoiding approximately $39 million to date.

DoD is working with EPA and state regulators, along with communities, to improve the timeliness of peer review in the regulatory consultation and public dialogue processes.

Communication Over the Internet

DoD's Environmental Cleanup Home Page presents general information about the DERP. This Internet site contains information on DERP policies, guidance, BRAC cleanup, public involvement, small business, related publications, and conferences, as well as links to the Component Internet sites and other related Internet sites. This report and previous DERP annual reports can also be found on-line.

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DoD's Environmental Cleanup Home Page
http://www.dtic.mil/envirodod

The Components' Internet sites provide general information about Component programs; information on installation status, policies, and guidance; fact sheets; technology descriptions; staff directories; comment forms; links to other sites; and more. In general, Component sites are useful to both project managers in the field and interested citizens. (See Appendix G for the Components' environmental Internet site addresses and other related links, such as EPA.)

To enhance the communication of information within DoD, the Department created the Defense Environmental Network & Information eXchange (DENIX). DENIX provides DoD environmental managers with a central communications platform from which to obtain timely access to environmental legislative, compliance, restoration, cleanup, and DoD unique information. Easy access to this information through the Internet helps these managers ensure compliance, avoiding costly fines and protecting DoD's training and operating missions. DENIX allows users to read on-line environmental publications (proprietary or DoD-specific); send and receive mail electronically on the DENIX host computer or across the Internet; exchange environmental information via managed discussion forums based on a subject area; send

and receive required reporting data through the chain of command; peruse and request environmental training courses and seminars; access the DENIX directory service database; and upload and download files to and from a personal computer. DENIX served over 6,000 DoD users during 1998.

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DENIX
http://www.denix.osd.mil

Optimization of Final Cleanup Phases

As sites move through the cleanup process**,** some may require significant operational activities and monitoring to ensure the continuing effectiveness of the cleanup remedy. Optimization of the operation of selected remedies (RA-O) and of any long-term monitoring (LTM) offers the potential for notably increasing the efficiency and cost-effectiveness of the remedy.

To ensure optimum effectiveness of the remedy once it is in place, the review and update of operations at RA-O sites should occur periodically according to optimization guidance principles. Every program is unique, however, and it is necessary to tailor the optimization process to the specific conditions of each site and its needs. Formal five-year reviews offer a convenient vehicle for optimization; however, supplementing this by conducting reviews continually on an informal level is useful. If an evaluation team discovers during the optimization process that the remedy is inadequate, modifications can occur immediately to save money and ensure cleanup effectiveness.

LTM, which occurs after sites move into the response complete category, helps confirm the success of cleanup remedies. This monitoring is an essential part of the environmental restoration process. Recent tools, such as the Air Force Center for Environmental Excellence's *Long-Term Monitoring Optimization Guide*, advocate establishment of an ongoing LTM optimization program to maintain maximum monitoring effectiveness.

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Long-Term Monitoring Optimization Guide
http://www.afcee.brooks.af.mil/er/erproducts.htm

Estimated time periods for such monitoring are difficult to predict. In some cases, the monitoring may have to continue indefinitely (e.g., at landfills). Therefore, the efforts and costs associated with LTM represent a substantial future investment for DoD.

Environmental Technology

Once DoD establishes the need to clean up a site on an installation or property, it must select a "remedy" to address potential risk to human health and the environment — and return the property to safe and productive use. The use of advanced technologies, and the development of new technologies, can substantially speed up

cleanup, increase cleanup effectiveness and reduce life-cycle costs of the environmental cleanup program.

DoD is committed to developing and fostering the use of new technologies to solve the military's unique contamination problems such as unexploded ordnance. DoD also strives to ensure that technologies are used appropriately and in areas where they will do the most good. To ensure the application of the most effective and appropriate cleanup technologies (and the appropriate allocation of resources), the military components first identify their environmental cleanup technology requirements depending on site-specific and DoD-wide needs. DoD identifies environmental technology needs by the following process:

- Components identify environmental technology needs by prioritizing problems identified by the installations.
- Technology needs are validated for technical soundness and become candidates for research and development if no appropriate technology exists or is under development.
- The science and technology community develops project and program proposals based on a prioritized list of technology requirements.

To address DoD-wide needs, the grouping and sorting of technology requirements occurs through joint-service technology committees, such as the Strategic Environmental Research and Development Program (SERDP). SERDP is a tri-agency cooperative program involving DoD, the Department of Energy (DOE) and EPA. Congress established SERDP in 1990 to capitalize on the capabilities of the national laboratory system and the private sector and thus to leverage other federal investments to meet environmental remediation challenges.

As projects emerge from the research and development phase, they move toward implementation through DoD's demonstration and validation programs, such as the Environmental Security Technology Certification Program (ESTCP). Similar to SERDP, ESTCP is DoD's corporate demonstration-validation program. ESTCP's goals include demonstrating and validating innovative environmental technologies under real-world conditions, addressing the most urgent DoD environmental needs, and promoting the rapid implementation and use of advanced environmental technologies.

Building Technology Partnerships and Sharing Information

New, more effective technologies hold great benefits for DoD's cleanup program. To ensure that DoD is in the mainstream of technological progress, DoD participates in technology-related conferences, symposia, and workshops. The sharing of this information is also very important. To provide easy access to technology news and related work groups, each Component has its own Web sites. Through learning more about technological progress, and through sharing both successful and less-than-successful experiences with other groups, DoD is working to expedite and improve its cleanup program. The following subsections describe these groups and their activities.

The Federal Remediation Technologies Roundtable

The Components work closely with each other, as well as with the public and private sectors, to foster technology innovation. One example of such cooperation is the Federal Remediation Technologies Roundtable (FRTR)—an interagency working group that identifies and publicizes solutions to the federal government's hazardous waste challenges. To date, this group has focused on the exchange of information on innovative hazardous waste characterization, monitoring, and treatment technologies. The work group has evaluated, documented, and published more than 140 remediation technology case studies drawn from cleanups at federal sites. These case studies provide in-depth information for field-level environmental professionals.

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FRTR Internet site
http://www.frtr.gov

Selecting a cleanup technology is difficult because information is scattered throughout multiple sources and is constantly changing. To address this issue, in FY98 the U.S. Army Environmental Center (USAEC) led an effort to update the *Remediation Technologies Screening Matrix and Reference Guide* under the auspices of the FRTR. This screening matrix and guide is a "living" document that consolidates masses of related and overlapping information needed for evaluating alternative technologies. Although the guide is not intended as a sole source of information that remedial project managers (RPMs) will rely on in selecting remedies, it does provide a convenient compilation of information on commonly recognized technologies that RPMs can use to perform an improved, direct, guided search. The most recent guide's availability on the Internet offers many additional advantages—the size of the guide is not a limiting factor; references in the guide can be linked to other government and private Internet pages; future updates will be less expensive and time consuming; and links to other information source are easily updated (no need to reprint a paper version every time a new link is added).

WorldWideWeb

Federal Remediation Technologies Roundtable Remediation Technologies Screening Matrix and Reference Guide, Version 3.0
http://www.frtr.gov/matrix2/top_page.html

Joint Service Technology Sharing Efforts

To further facilitate the sharing of environmental technology information, the U.S. Army Environmental Center, the Air Force Center for Environmental Excellence, and the Naval Facilities Engineering Service Center have formed a Tri-Service Environmental Support Center Coordinating Committee. This committee meets three times a year and includes representatives from the Components. The Components also participate in a joint technology demonstration project through ESTCP and SERDP. Technology demonstrations involve representatives from multiple services and other government agencies. The Services' technology execution staffs also meet frequently to share information on implementation successes and failures.

Interstate Technology and Regulatory Cooperation

The Interstate Technology and Regulatory Cooperation (ITRC) Working Group is led by state regulators and focuses on reducing state barriers to the deployment of innovative hazardous waste technologies. To achieve this goal, ITRC has partnered with federal agencies, including DoD, EPA, and DOE; stakeholders; and representatives of the environmental industry. By acting as a network for state regulators, federal agencies, vendors, and consultants, ITRC helps leverage limited resources to enhance and encourage the use of innovative technologies.

ITRC helps to expedite the acceptance of new technologies by producing guidance documents that provide uniform data requirements for technologies such as soil washing, electrokinetics, phytoremediation, low-temperature thermal desorption, permeable barrier walls, and natural attenuation. To date, ITRC has 24 final or near final guidance documents that are helping to standardize the technology approval process across states. Preliminary analysis indicates that the use of ITRC guidance documents in approving technologies reduces the time needed to complete the regulatory approval process by as much as 20 percent.

Following soil removal of source contamination at Tobyhanna Army Depot, the EPA, the state, and the Army selected natural attenuation as the appropriate remedy for the site. This remedy will avoid the expenditure of approximately $7.5 million for conventional treatment.

ITRC developed and sponsored a training course on natural attenuation of chlorinated solvents. To date, more than 750 state regulators from 43 states have taken the course. Attendance at the course helped one regulator from Kansas identify a classic biodegradation pattern within a chlorinated solvent plume on an active Army installation in his state. By understanding the evidence before him, he could then support the Army's recommendation of natural attenuation as a primary cleanup remedy for groundwater contamination at the site. If properly applied, natural attenuation could be used as a complete remedy at approximately 15 percent of the nation's chlorinated solvent–contaminated sites, resulting in cost avoidance of as much as $7.8 billion.

Cleanup Program in Action:
Naval Air Weapons Station Point Mugu, California

Naval Air Weapons Station (NAWS) Point Mugu, California, has received several awards from the Chief of Naval Operations for environmental cleanup, environmental quality, natural resources conservation, and cultural resources management. The station received this recognition in large part because of its prudent use of innovative solutions to clean up a unique and fragile habitat on the installation.

Because of its lack of commercial development, NAWS Point Mugu is home to a wide variety of wildlife, including endangered species. The environmental staff at NAWS Point Mugu use solutions that protect these species and their environment and support the station's risk-reducing SMART (Saves Money / Alleviates Risk / Timely) objectives. For example, the station performs cleanup work within specified, limited time windows to avoid disrupting the nesting and mating seasons of endangered migratory birds. In addition, the station's wildlife biologists and archaeologists monitor site cleanup work when warranted, develop ecological risk-based cleanup goals, and integrate natural resource management techniques into cleanup designs.

In 1998, NAWS Point Mugu performed removal actions at 14 sites, restoring 12 acres of wetland and enhancing another 29 acres. NAWS Point Mugu also partnered with the Army to demonstrate a technology for cleaning up metal-contaminated soil on one site. According to estimates by the U.S. Army Corps of Engineers, this technology could reduce costs by 40 to 90 percent compared with such conventional cleanup technologies as excavation and off-site disposal.

Cleanup Program in Action:
McClellan Air Force Base, California

Fostering relationships with other federal organizations, state regulatory agencies, and the public is helping McClellan Air Force Base (AFB) reach environmental goals. McClellan's Environmental Management Directorate has always tried to keep information and ideas flowing. By organizing teams comprising regulators, the public, and base experts, the directorate was able to achieve outstanding successes in 1998.

McClellan has negotiated a soil cleanup model with regulators. Other DoD installations in California are now adopting this model. A further simplified document review process achievement, enabled McClellan AFB to complete three site-specific soil vapor extraction Engineering Evaluation and Cost Analysis documents in 1998.

Implementing Innovative Technologies

A common remediation challenge found at military installations is metal contamination in soil. DoD frequently evaluates new environmental cleanup technologies for addressing such contamination. The U.S. Army Environmental Center and the U.S. Naval Facilities Engineering Service Center jointly demonstrated the process of physical separation combined with acid leaching for removing heavy metals from range soil. Physical separation capitalizes on the density differences between metals and soil. When

contaminated soil is suspended in water, the denser metals settle out for collection and recycling. Acid leaching dissolves and washes metals from the clay fraction of soil. This technology has the potential for saving DoD millions of dollars. For a processing load of 10,000 tons of soil, physical separation and acid leaching costs approximately $168 per ton, compared with $200 per ton for stabilization and $300 per ton (plus a $40 per ton transportation charge) for landfilling the soil. In addition, DoD can sell lead recovered from the separation and leaching process to a smelter for about $300 per ton.

Cleanup Program in Action:
Marine Corps Air Station, El Toro, California

Through a cooperative arrangement between the Marine Corps and the Air Force, the Marine Corps Air Station (MCAS) El Toro obtained soil vapor extraction (SVE) treatment system equipment from Norton Air Force Base. The Air Force successfully used the SVE unit for its cleanup at Norton before transferring it to the Marine Corps. MCAS El Toro is using the SVE unit to remediate soil contaminated with solvents and gasoline. The use of the SVE unit at MCAS El Toro should shorten the length of the cleanup project by 6 months and save $1.1 million in cleanup costs. Once the SVE treatment is near completion and the use of the equipment is complete, the Navy plans to reuse the SVE unit at other Navy and Marine Corps installations upon request.

Community Involvement

Community involvement in DoD's environmental cleanup efforts remains a strong component of the Environmental Restoration Program. The Restoration Advisory Board (RAB) is the major vehicle for involving citizens who live on or near a military installation or FUDS property in the cleanup process. RAB members play an active role in DoD's cleanup planning process, helping develop partnerships between DoD and the community and often providing input and advice on cleanup activities. Such input and advice from RABs help DoD conduct environmental cleanup activities in a timely and cost-effective manner while taking community concerns into account.

Restoration Advisory Boards

Included as a supplement to this report, the *RAB Report to Congress for Fiscal Year 1998* presents the RAB program in detail. Located at the back of this report, this supplement summarizes the status of DoD's RAB program and the Technical Assistance for Public Participation (TAPP) development efforts for FY98.

RABs complement other community involvement activities that take place at a military installation. These community involvement activities include holding public meetings, preparing and distributing informational mailings, establishing local information repositories, and conducting local school visits to discuss the cleanup program and associated activities. The RAB program provides a major conduit for installation cleanup information between DoD and the community.

RABs bring together people who reflect the diverse interests of a community and can help identify issues of concern regarding an installation's cleanup program. Begun in 1993, the RAB program is now well established at many active, closing, and realigning military installations and FUDS properties. In FY98, 340 military installations and FUDS properties in the United States and its territories participated in RABs. According to data received from installations, DoD spent approximately $4.6 million on RAB administrative activities during FY98.

In FY98, the number of RABs increased by 12, a smaller increase than in previous years; however, a majority of the installations with interest in RABs have already established them. RAB expenditures in FY98 decreased by $0.3 million from FY97 for several possible reasons: installations established fewer RABs; DoD is conducting fewer RAB training activities than in the early years of the program; and at some closing installations, the RABs elected to decrease the level of activity because cleanup issues and concerns have been addressed.

Technical Assistance for Public Participation

The Technical Assistance for Public Participation program allows installations to provide contracts for independent technical assistance to community RAB members. Its purpose is to improve the RAB's understanding of the technical remediation issues at the installation and improve public involvement in decision making. TAPP enables private sector sources to help community members understand the scientific and engineering issues underlying an installation's environmental restoration activities. This assistance fosters increased citizen trust, confidence, and involvement. Typical projects may encompass a review of proposed remedial technologies, interpreting health and environmental effect data, or reviewing restoration documents.

The final TAPP rule, published on February 2, 1998, allowed DoD to begin implementing the TAPP program at the installation level. In FY98, five installations participated in the TAPP Program. DoD expects an increase in TAPP participation during 1999 as more installations learn about the benefits of the program.

WorldWideWeb

Final TAPP Rule

http://www.dtic.mil/envirodod/rab/63fr_tapp.html

Community Involvement Web Site

In FY98, DoD modified the Community Involvement Web Site to provide a central location through which interested parties can access information on issues associated with the installation restoration, BRAC, RAB, and TAPP programs and other cleanup-related topics. The enhancement of the Web site also should help increase the two-way communication between DoD, RAB members, and the public.

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Community Involvement Web Site
http://www.dtic.mil/envirodod/involve

Access to Installation Information

As required by CERCLA, each installation on the National Priorities List maintains an administrative record located near the installation for public access. The administrative record must contain all information and documentation used in the selection of a response action. This file must contain not only those documents relevant to the chosen response action, but also relevant comments and information, site-specific data, guidance documents, and technical references that DoD considered in the ultimate remedy selection decision.

For installations not on the NPL, the installation will still maintain a general information repository containing current information, technical reports, and reference documents regarding environmental restoration activities at the installation. The information repository is usually located in a public building that is conveniently accessible to local residents, such as a public school, city hall, or library.

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The preceding section captures a few of the program's broadest accomplishments during the past year. Each page documents DoD's efforts to secure confidence and trust in the restoration program. Flexibility and openness to change are improving the program through sharing of lessons learned, adopting streamlining efficiencies, and pursuit of better technologies. Openness in communications and commitment to strong working relationships with stakeholders are advancing the program on many fronts. Innovative partnerships with states, technical peer review and community involvement activities all serve to improve the decisions we make. We believe these are the right things to do to make this the best program it can be, not just for DoD, but for everyone it affects.

Cleanup Program in Action:
BRAC Cleanup Team Workshops

In 1998, DoD sponsored three regional BCT Workshops. Each of the three Workshops included an informative main session along with several concurrent "tracks" focusing on technology, site closeout, cleanup, and policy topics. Attendees also participated in facilitated discussions that allowed time for communication among BCT members and sharing of lessons learned. In addition, attendees had a choice of two optional half-day sessions. One session provided introductory information for attendees who were new to BRAC cleanup and the other session featured a discussion on bioavailablilty, for the more experienced attendees. The workshops provided a forum where BCTs could learn about environmental cleanup policies, study new technical approaches, share lessons learned, and interact with their regional counterparts as well as headquarters representatives from DoD and EPA.